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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/520,955

02/11/2005

Douglas J. Robinson

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EXAMINER

WILKINS III, HARRY D

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

07/16/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/520,955	Applicant(s) ROBINSON ET AL.	
	Examiner Harry D. Wilkins, III	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) 24-28 and 46-54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23, 29, 30, 32 and 35 is/are rejected.
- 7) ☒ Claim(s) 1, 31, 33, 34 and 36-45 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/10/05, 4/2/08</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-45 in the reply filed on 12 May 2008 is acknowledged. The traversal is on the ground(s) that it is not believed that the cell elements and an array of cells containing said elements are not to be patentably distinct. This is not found persuasive because the claim groups I and II are not so related. The features of group I and group II do not contain corresponding features as Applicant has argued.

2. Applicant's election with traverse of species I.b. in the reply filed on 12 May 2008 is acknowledged. The traversal is on the ground(s) that it is not believed that the various species are not to be patentably distinct. This is not found persuasive because the species are sufficiently different that they have mutually exclusive characteristics. Applicant's statement is also not sufficiently affirmative enough to make clear that Applicant is admitting that the various species are obvious variants over one another.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

3. Claim 1 is objected to because of the following informalities: in line 4, "the anode shell" should be "the cathode shell" since it includes a cathodic plate and the draft tube. Appropriate correction is required.

4. Claim 37 is objected to because of the following informalities: in line 1, "claim 35" should be "claim 36" since it includes features from claim 36, not claim 35 ("double nozzle"). Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-10, 15, 29-30, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiricny et al's article "A Study of the Spouted-bed Electrowinning of Copper" in view of Gestermann (WO 01/40549 with reference to its English equivalent US 6,984,296).

Jiricny et al teach (see figure 1 and related description, pages 630-632) a cell element for the electrowinning of metal from metal ion solutions including an anode shell and a cathode shell separated by an insulating diaphragm. The anode shell was delimited by an anodic plate. The cathode shell was delimited by a cathodic plate provided with at least one draft tube capable of establishing a spouted bed of metallic beads. The diaphragm was a microporous plastic material (i.e.-provided with perforations allowing free circulation of the electrolyte while hindering the passage of the metallic beads from the cathode shell to the anode shell).

Jiricny et al teach the cell as merely a single cell element, not as part of a larger laminated cell array. Also, Jiricny et al fail to teach at least one conductive protrusion for transmitting direct electric current to an anode being attached to the anode plate.

Gestermann teaches (see abstract, figures and col. 1, line 5 to col. 2, line 6 of US '296) use of single-element technology for creating bipolar arrangements for electrolysis

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reactors, wherein two half-shells are arranged with a membrane/diaphragm sandwiched between the half-shells. The backs of the half-shells are electrically connected by suitable contact strips. This arrangement permits arrangement of multiple cells in series with a single power source to increase the overall production capacity without requiring a separate power source for each individual electrolysis cell. Further, Gestermann teaches that supporting elements (i.e.-rib shaped protrusions) are provided in the half-shells for the purpose of providing stability with respect to the pressing forces acting on the half-shell walls when arranged in an array of cells.

Therefore, it would have been obvious to one of ordinary skill in the art to have (1) adapted the cell of Jiricny et al to be used in a single-element technology multiple cell system as taught by Gestermann because of the increased production capacity without a corresponding increase in apparatus costs and (2) to have added at least one conductive supporting element to the cell of Jiricny et al to contact the anode for the purpose of both conducting electricity to the anode and to absorb the pressing forces acting on the half-shell wall.

Regarding claim 2, the conducting protrusion of Gestermann was a rib.

Regarding claim 3, the ribs of Gestermann had two ends, one attached to the anode and the other being attached to the anode plate and provided with a contact strip.

Regarding claim 4, the ribs of Gestermann acted as spacers.

Regarding claims 5 and 6, Jiricny et al teach making the cathode shell from a rectangular array of square (rectangular) bars.

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Regarding claim 7, it would have been obvious to one of ordinary skill in the art to have added an inspection window to at least the cathode shell to permit a worker to ensure that the spouted bed of metallic beads was operating in the intended fashion.

Regarding claim 8, Gestermann teaches that the anode and cathode half-shells were bolted together using peripheral flanges.

Regarding claim 9, it would have been obvious to one of ordinary skill in the art to have selected optimum materials that have both the necessary strength and corrosion resistance to their respective environments for the two half-shells. Absent a showing of unexpected results, it is considered obvious to pick titanium and/or stainless steel and/or nickel since these metals are generally known to be strong and corrosion resistant.

Regarding claim 10, the anode of Jiricny et al was a DSA anode supplied by Eltech Corp. Such anodes are known in the art to comprise a titanium substrate coated with electrocatalytic platinum group metals or metal oxides.

Regarding claim 15, the diaphragm of Jiricny et al formed a full face gasket that contributed to the hydraulic seal between the anode and cathode shells.

Regarding claims 29 and 30, the draft tube of Jiricny et al was rectangular in shape and made of copper, a corrosion resistant material.

Regarding claim 32, the draft tube of Jiricny et al extends from the cathodic plate to the diaphragm.

Regarding claim 35, the cathode shell of Jiricny et al included a catholyte nozzle at the base of the draft tube for feeding the electrolyte, thereby generating a motion capable of establishing a spouted bed of metallic beads.

7. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiricny et al's article "A Study of the Spouted-bed Electrowinning of Copper" in view of Gestermann (WO 01/40549) as applied to claims 1-10 and 15 above, and further in view of Pellegrini (US 4,425,214).

Jiricny et al and Gestermann are silent with respect to using a bimetallic contact strip.

Pellegrini teaches (see abstract, cols. 1-3) that certain disadvantages of bipolar electrolysis cell arrangements can be overcome by the use of a bimetal contact between the backside of a cathode shell and the adjoining backside of an anode shell.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the bimetallic contact strip of Pellegrini into the cell of Jiricny et al and Gestermann for the purpose of preventing corrosion while maintaining sufficient conductivity.

Regarding claims 12-14, the bimetal strip would have been welded, as taught by Gestermann, in correspondence with the supporting element (rib) to the anode shell. It would have been obvious to one of ordinary skill in the art to have attached both the rib and the bimetal strip in a single step to reduce the overall number of production steps.

8. Claims 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiricny et al's article "A Study of the Spouted-bed Electrowinning of Copper" in view of

Gestermann (WO 01/40549) as applied to claims 1-10 and 15 above, and further in view of Blackwell et al (US 6,241,220).

Jiricny et al merely teaches the insulating diaphragm as a microporous plastic material from Daramic Corp.

Thus, Jiricny et al do not expressly teach that the microporous diaphragm was made of a woven fabric.

Blackwell et al teach (see abstract) creation of sintered plastic foams from woven fibers. The creation of the foam from a woven fabric had the advantages of (see cols. 5-6) permitting precise control of the pore size, the tortuosity of the pores, the rigidity of the foam and the freedom from clogging (i.e.-no blind pores).

Therefore, it would have been obvious to one of ordinary skill in the art to have substituted a sintered woven plastic foam as taught by Blackwell et al for the generic microporous plastic material of Jiricny et al because the woven plastic foam of Blackwell had the advantages of precise control of the pore size, the tortuosity of the pores and the rigidity of the foam as well as ensuring the freedom from clogging of the porous foam.

Regarding claim 18, Blackwell et al suggest (see col. 9, lines 16-20) that various weave patterns could be used including reverse Dutch weave.

Regarding claims 19-22, it would have been obvious to one of ordinary skill in the art to have optimized the warp wire features of the fabric in order to precisely control the pore size, the tortuosity of the pores and the rigidity of the foam.

Regarding claim 23, it would have been obvious to one of ordinary skill in the art to have selected an optimal material for the woven fabric by balancing various parameters including cost, corrosion resistance, strength, chemical inertness, etc.

Allowable Subject Matter

9. Claims 31, 33, 34 and 36-45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter: each of claims 31, 33, 34, 36, 38, 41, 44 and 45 define features which are not taught by Jiricny et al and are not obvious in view of the teachings of the rest of the prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

hdw